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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,845	02/26/2002	Mustafa Pinarbasi	SJO920010039US1 (12780.39)	6230
32112	7590	11/02/2005	EXAMINER DAVIS, DAVID DONALD	
INTELLECTUAL PROPERTY LAW OFFICE 1901 S. BASCOM AVENUE, SUITE 660 CAMPBELL, CA 95008			ART UNIT 2652	PAPER NUMBER

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/084,845

Applicant(s)

PINARBASI ET AL

Examiner

David D. Davis

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on August 17, 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 29-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Chen et al (US 6,183,859). Applicant's Admitted Prior Art (AAPA) shows in figure 2 a magnetic head 30 including a spin valve sensor 50 with a magnetic shield layer 34 being fabricated above a substrate base 42. Figure 3 shows a first electrical insulation layer first electrical insulation layer 44 being fabricated above the shield layer 34 and a spin valve sensor 50 structure being disposed above the first electrical insulation layer 44 layer. The spin valve sensor 50 structure of AAPA includes a seed layer 76/80/84 being fabricated above the first electrical insulation layer 44 layer. A PtMn layer is disposed above and upon the seed layer 76/80/84 and at least one pinned magnetic layer and at least one free

magnetic layer is disposed above the PtMn layer. The seed layer 76/80/84 includes an  $\text{Al}_2\text{O}_3$  sublayer, an NiMnO sublayer, and an Ta sublayer.

The Ta seed sublayer of AAPA is fabricated to have a thickness of approximately 10 to 40 Angstroms. AAPA shows in figure 3 that the spin valve sensor 50 layers include at least one pinned magnetic layer having a composition including CoFe and at least one spacer layer having a composition including Cu with at least one free magnetic layer having a composition including Co or CoFe.

AAPA discloses that the sublayer has an upper surface. As the claims are directed to a spin valve sensor, per se, the method limitation appearing in claim 7 has only been accorded weight to the extent that it affects the structure of the completed spin valve sensor. Note that "[d]etermination of patentability in 'product-by-process' claims is based on product itself, even though such claims are limited and defined by process [i.e., "etched"], and thus product in such claim is unpatentable if it is the same as, or obvious form, product of prior art, even if prior product was made by a different process", *In re Thorpe, et al.*, 227 USPQ 964 (CAFC 1985).

Furthermore, note that a "[p]roduct-by-process claim, although reciting subject matter of claim in terms of how it is made [i.e., "etched"] is still product claim; it is patentability of product claimed and not recited process steps that must be established, in spite of fact that claim may recite only process limitations", *In re Hirao and Sato*, 190 USPQ 685 (CCPA 1976).

AAPA, however, is silent as to a sublayer of the seed layer being Si. AAPA is also silent as to the seed sublayer being fabricated to have a thickness of approximately 20 Angstroms and the PtMn layer having a thickness of approximately 120 Angstroms.

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Chen et al discloses in the paragraph bridging columns 3 and 4 a sublayer of a seed layer being either Ta or Si, which includes a crystalline form differing from a deposited Si seed layer.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to substitute the Ta layer of AAPA with a Si layer as taught by Chen et al.

The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to substitute a Ta layer with a Si layer, which is well within the purview of a skilled artisan and absent an unobvious result, because the two layers are art recognized equivalents.

It also would have been obvious to a person having ordinary skill in the art at the time the invention was made to fabricate the seed sublayer of AAPA to have a thickness of approximately 20 Angstroms and the PtMn layer of AAPA to have a thickness of approximately 120

Angstroms. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to fabricate the seed sublayer to have a thickness of approximately 20 Angstroms (down from 35 Angstroms) and the PtMn layer to have a thickness of approximately 120 Angstroms (down from 150 Angstroms), which is well within the purview of a skilled artisan and absent an unobvious result, to reduce the size of the spin valve sensor.

### ***Response to Arguments***

Applicant's arguments filed August 17, 2005 have been fully considered but they are not persuasive. Applicant asserts on page 13 in the third full paragraph the following:

Chen '359 teaches nothing with regard to the characteristics of a PtMn antiferromagnetic layer; it does not even mention an antiferromagnetic layer, not does it mention PtMn. Therefore, Chen teaches nothing with regard to the

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advantages that could be obtained by fabricating a PtMn antiferromagnetic layer upon an Si seed layer, as opposed to the prior art tantalum seed layer

Chen is not relied upon for the PtMn layer. AAPA is shows the PtMn layer.

In the first full paragraph on page 14, asserts the following:

Applicant has amended claims 7, 8, 21 and 22 to describe the upper surface of the Si seed layer as a product limitation rather than a process limitation; specifically that the crystallographic surface of the Si seed layer surface differs from that of a deposited Si seed layer.

As stated supra, the Si layer of Chen, which Chen teaches to be an art recognized equivalent of the Ta layer of AAPA, encompasses a crystalline form or crystallographic surface as defined by The American Heritage Dictionary of the English Language, Fourth Edition. This Si differs from a nebulous undefined deposited Si seed layer.

### ***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

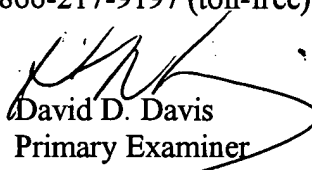
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Davis whose telephone number is 571-272-7572. The examiner can normally be reached on Monday thru Friday between 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A.L. Wellington can be reached on 571-272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
David D. Davis  
Primary Examiner  
Art Unit 2652

ddd